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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

AURORA, REENA

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/760,679

Applicant(s)

WISLER ET AL.

Examiner

Reena Aurora

Art Unit

2862

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on amendment received on 6/4/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2 - 14, 16 - 26, 28 - 34 and 36 - 41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2 - 14, 16 - 26, 28 - 34 and 36 - 41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2 – 14, 16 – 26, 28 – 34 and 36 – 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al. (6,003,620) in view of Collins et al. (5,209,104) and further in view of Sinclair (4,996,489).

3. As to claims 8, 7, 23, 30 and 38, Sharma et al. (hereinafter referred to as Sharma) discloses a downhole in-situ measurement of physical and or chemical properties including fluid saturations of cores while coring having a cylindrical enclosure (12) for enclosing the material (26); at least one transmitter having an antenna (70) on the inside of the cylindrical enclosure for propagating electromagnetic radiation in the material; at least one receiver having an antenna (70) on the inside of the cylindrical enclosure for measuring electromagnetic radiation in the material indicating the parameter of interest; a core bit (18) operatively coupled to the cylindrical enclosure (12) for separating the material (26) from the subterranean formation (20); and a drilling tubular (21) for conveying the cylindrical enclosure into a borehole in the subterranean formation and the drilling tubular is selected from a drill string and coiled tubing (Note Fig. 1 Prior Art) and (Note Fig. 6, Column 7, Lines 3 - 33). Sharma further teaches electromagnetic, acoustic, fluid and differential pressure, temperature measurement

Art Unit: 2862

methods to measure the parameters of the core sample and measuring electromagnetic radiation in the material at each of the at least two frequencies (Column 7, lines 15 - 25). Sharma fails to disclose at least one receiver having antenna axially displaced from at least one transmitter antenna. Collins et al. (hereinafter referred to as Collins) discloses a method for desaturating a porous rock for electrical resistivity measurements including current-conducting electrodes (12, 16) axially separated from voltage electrodes (17, 18) for measuring a characteristic of a porous rock. Therefore, it is well known within the art to position axially separated electrode array or circumferentially spaced electrode array about a core sample for measuring a characteristic. Sinclair discloses a laboratory technique for measuring complex dielectric constant of rock core samples including a transmitting antenna (20) propagating electromagnetic radiation in the material and a receiver antenna (30) measuring electromagnetic radiation (Fig. 1). Sinclair further discloses testing the core sample for many frequencies (Column 4, Lines 4 – 8). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the device of Sharma in view of Collins and further in view of Sinclair to substitute transmitter antenna or receiver antenna for electrode array since both are being used to measure a characteristic of the core sample and would provide similar results.

4. As to claims 2 and 28, Sharma discloses a processor (36) for processing data measured by the receivers (Fig. 2A).

5. As to claims 3 and 29, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose the

Art Unit: 2862

parameters to be measured are resistivity and dielectric constant of the material.

Sinclair discloses laboratory technique for measuring complex dielectric constant of rock core samples as explained above wherein dielectric constant is one of the parameters of interest. Sinclair fails to disclose resistivity as one of the parameters of interest.

However, it is well known in the art to measure attenuation between two receivers for determining the formation resistivity. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have determined resistivity of the formation along with the dielectric constant as a parameter of interest.

6. As to claims 4 – 6, Sharma discloses the material can be liquid, solid or gas (Column 2, Lines 20 - 23).

7. As to claims 9 and 32, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma further discloses flush mounting of the sensor array (Column 7, Lines 7 - 10). Sharma fails to disclose mounting of sensors in a circumferential recess on the inside of the cylindrical enclosure. However, positioning the transmitter in a circumferential recess would be more stable than mounting the transmitter on the inside of the cylindrical enclosure. Therefore it would have been obvious to one of ordinary skill in the art to make the system of Sharma such that the transmitters are set in a circumferential recess on the inside of the cylindrical enclosure in order to securely position the transmitter in the cylindrical enclosure.

Art Unit: 2862

8. As to claim 12, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose antenna set in a plurality of apertures on the inside of the cylindrical enclosure. However it is common knowledge in the art that to use apertures for propagation of electromagnetic radiation. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have included a plurality of apertures on the inside of the cylindrical enclosure for propagating the desired mode of electromagnetic radiation to the antenna.

9. As to claims 10, 13 and 33, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose ferrite material positioned in the recess for shielding the cylindrical enclosure from electromagnetic radiation. However it is known ferrite surfaces boost the signal by directing more of the signal outward from the antenna. Therefore, it would have been obvious for one skilled in the art, at the time of invention to modify the device of Sinclair to have included ferrite material as a shielding material such that ferrite core protects the transmitter and receiver from damage and it also increases the transmission range of the system.

10. As to claims 11 and 14, Sharma discloses a downhole in-situ measurement of physical and or chemical properties as explained above. Sharma fails to disclose an epoxy potting material for fixing the transmitter antenna in the recess. Sinclair discloses laboratory technique for measuring complex dielectric constant of rock core samples as explained above wherein epoxy potting is used for fitting elements together.

Art Unit: 2862

11. As to claims 16 – 26 and 36 – 41, the method claims are rejected on the same grounds as claims 2 – 14 and 28 – 34, since the method steps operate in the same functional manner as disclosed in the apparatus claims.


***Response to Arguments***

12. Applicant's arguments with respect to claims 2 – 14, 16 – 26, 28 – 34 and 36 - 41 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reena Aurora whose telephone number is 703-605-1372. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 703-308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
Reena Aurora  
July 3, 2003

  
WALTER E. SNOW  
PRIMARY EXAMINER